Fractional Capacitance Discharge Transistors and Their Alternative Application in Data Transmission Lines as a Supplement to Fiber-Optic Transmission

24 September 2023

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Introduction

Piezo-Inductive Fractional Capacitance Discharge Transistors hold massive advantages for computing application given their ability to convey information through processor systems over relatively short distances without the need to push electrons through data pipelines, obviating any possibility of heat generation or arcing of electricity between transistors.

While the range of transmission between these specialized transistors concatenated by trapped cations is limited, the zero net electrical flow property of its mode of operation recommends it for theoretical application in data transmission not so much because it produces little heat and not so much because because of the speed at which the data itself might move through an individual pipeline, but because of the number of channels of data that might be able to move data through an individual pipeline wherein the walls of that pipeline are lined with arrayed, trapped electrons conveying electroweak forces between these specialized transistors; these channels allowing data to move in parallel with transmitted light using space ordinarily wasted within the walls of the fiber. That narrow space, while not suitable for supporting other modes of transmission, can be used to support thousands of parallel two-dimensional electroweak induction-based data channels.

Abstract

A new model of fiber-optic cable design (an improvement to existing transmission networks requiring that new cables be laid) may include embedding specialized transistors within the walls of individual fibers in fiber-optic cables designed to carry information through what may be termed electrical induction channels. This information would flow at essentially the speed of light as it would not depend upon the flow of electrons per se, but rather, chains of induction effects over short distances between billions of transistors embedded in the walls of the fiber.

Transmission of data using this mode in parallel with traditional optical data transmission may be used to effectively exponentiate the amount of data that may be transmitted without infringing on the optical functionality of the cable. The specialized transistors would occupy a space that is too narrow for intact light waves to propagate but which would allow for two-dimensional induction effects to propagate whilst the walls of the fiber-optic cable insulate the trapped ions bridging the transistors from any interference from the light carried down

the bulk of the fiber-optic cable. The natural composition of fiber-optic cable lends itself to this function.

While augmenting existing fiber-optic systems with an amplitude-modulation based bandwidth enhancement system would offer a benefit of a 500-fold increase in overall bandwidth without making any changes to existing fiber-optic cables, that concept may work hand-in-glove with this proposal, resulting in an extremely high throughput multiplier. While replacing all of the fiber-optic cable in the country would be onerously expensive, replacing select cables would likely be an economical solution to certain bottleneck-related issues.

While other attempts have been made at transmitting data in multiple dimensions (most of them focused on trying to transmit data using multiple frequencies of light simultaneously,) those experiments have shown that transmitting data on multiple frequencies of light results in data corruption during transmission. The breadth of a wall of a single fiber would have sufficient space to support many tens of thousands of these parallel induction channels. The quantity of energy needed to switch these transistors is so small that the switching process may be driven by light, meaning that no special electrical system would be needed to be run alongside the optical transmission system in the proposed scheme.

The potential impact of this advancement cannot be understated given that, when coupled with a form of amplitude modulation previously described, existing per-fiber speeds may be augmented by 500 fold multiplied by approximately 10,000 fold, which works out to 385 Exabytes per second per fiber. It is only by encoding information in multiple dimensions that such large quantities of data can be moved through a single strand of fiber.

Mass-producing fiber with not only embedded transistors but ion traps at a comparatively high density that retains classical optical properties would involve overcoming engineering challenges that this author cannot begin to speculate about. Another engineering challenge to overcome would involve the design of optical transmission systems capable of injecting not only thousands of separate pulses of light into thousands of individual fibers, but approximately 10,000 additional precisely-targeted beams of light for each of those fibers that are oriented directly toward the part of the edge of the fiber corresponding to the appropriate induction channel; a target just a few nanometers wide. Such a system would require both automated calibration and alignment capabilities (with automated nanoscopic visual detection of target points) and absolute seismic stability in order to maintain function.

Beyond data transmission over distance, such a system could supplant data pipelines within computer systems, themselves, improving throughputs in data ports of all types and in the crucial RAM-CPU interfacial zone. Overcoming internal and external transmission bottlenecks is critical for taking full advantage of leading-edge CPU and RAM technologies likely to be be incorporated into systems in the near future.

Conclusion

A logical initial testing ground for this type of revolutionary fiber-optic transmission system would be in the interlinking of supercomputing nodes and other mainframes within internal, secure networks. If successful, this may be expanded to tier-1 Internet backbone systems and, perhaps, eventually to consumer-grade fiber-optic Internet.